

## ABSTRACT

A signal receiver (11) receives an analog signal via a twisted pair cable (31). An A/D converter (12) converts the analog signal to a digital signal. A phase detection unit (14) detects the phase of the digital signal, and generates a reception timing signal. A transmission timing generation unit (15) controls, based on the reception timing signal, timing for a transmission processing unit (16) to output the digital signal such that the reception signal (point A) and a transmission signal (point D) are different in phase by a predetermined degree. The transmission processing unit (16) outputs, in accordance with the timing, a digital signal obtained by performing mapping on data inputted from a connection device (20). A D/A converter (17) converts the digital signal to an analog signal. A signal transmitter (18) transmits the analog signal via a twisted pair cable (32).